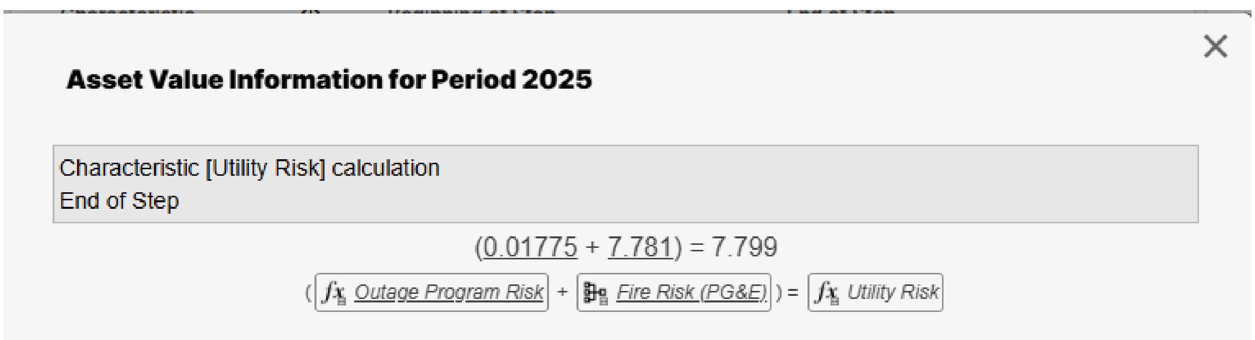
Utility Risk Model

The utility risk model combines **Wildfire** and **Outage program** risk¸ with calculations performed at the circuit level. To make the results comparable and easy to interpret, both fire risk and outage program risk are multiplied by 100. This scaling is done purely for better visualization, ensuring that both components appear clearly and consistently in charts and dashboards.

With these weightings applied, the utility risk at the circuit level is calculated as the sum of the weighted wildfire risk and the weighted outage-program risk (which includes both PSPS and EPSS).

The current weighting structure is preliminary and should be confirmed and validated by Liberty to ensure it reflects their priority and risk-tolerance framework.

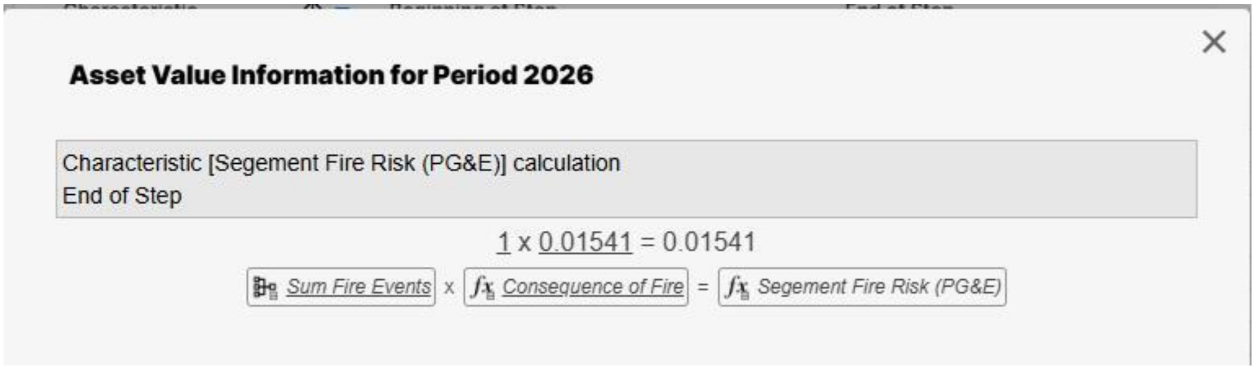
The formula below illustrates the utility risk calculation at the circuit level:



Wildfire Risk

The DIREXYON solution calculates fire risk by multiplying the **number of fire events** produced in the Monte Carlo simulation by the **corresponding consequence** value in segment level. Once the segment-level fire risk is calculated, the results are aggregated upward: segment risks are summed to produce circuit – level fire risk, and circuit level risk are further combined to generate the overall utility-level fire risk.

The fire risk calculation at segment level is shown below:



Number of fire events:

The DIREXYON Solution estimates the number of fire events through Monte Carlo simulation that evaluates, for each asset and each year, whether a sequence of conditions is met that would result in a fire. Since wildfires initiated by utility equipment requires several independent conditions to align, the model reproduces this dependency by explicitly simulating failure, outage, and ignition. A fire event is counted only all stages of the chain occur. For every asset, the simulation first determines whether the asset experiences a failure during the year. The yearly probability of failure is age-dependent and is derived from Weibull incremental failure probability. The probability of failure for each asset class is described in section 2.2.1.1.1 DIREXYON report.

A random value is drawn from a uniform distribution and compared to this yearly failure probability; If the value is less than the probability, the model records a failure for that asset in that year.

If a failure occurs, the model then tests whether the failure results in an electrical outage. This is done by drawing a second random number and comparing it to the probability of outage given failure. Probability of outage is explained in 2.2.1.1.2 DIREXYON report.

Only if the outage occurs, the model proceeds to ignition step.

The ignition step determines whether the outage generates a fire causing spark or thermal event. This is the final step in the fire-generation chain. A third random value is drawn and compared against the ignition probability. If the value is below the ignition probability, the asset generates a fire event for that iteration and that year. Each ignition event is counted as one fire event.

At the segment level, the total number of fire events for a given simulation year is obtained by summing the fire events generated by all child assets in that segment. This process is repeated across many Monte Carlo iterations, where each iteration represents a different possible future year with different combinations of failure, outages, and ignitions. After completing all iterations, the model calculates the expected annual number of fire events for each segment by averaging the total fire event counts across all iterations. Segment level fire event counts are then summed to determine the total number of fire events at circuit level, and circuit-level counts are further aggregated to obtain the total number of fire events for the entire utility.